

# (12) UK Patent Application (19) GB (11) 2 367 755 (13) A

(43) Date of A Publication 17.04.2002

(21) Application No 0018856.5

(22) Date of Filing 01.08.2000

(71) Applicant(s)  
Joseph Anthony Griffiths  
Mid Trees, Petworth Road, Haslemere, Surrey,  
United Kingdom

(72) Inventor(s)  
Joseph Anthony Griffiths

(74) Agent and/or Address for Service  
Venner Shipley & Co  
20 Little Britain, LONDON, EC1A 7DH,  
United Kingdom

(51) INT CL<sup>7</sup>  
A62B 17/04 // A62B 18/00

(52) UK CL (Edition T )  
A5T TCH TCX

(56) Documents Cited  
GB 2008413 A GB 0826198 A  
US 5016625 A US 4807614 A

(58) Field of Search  
UK CL (Edition T ) A5T TCH TCT TCX  
INT CL<sup>7</sup> A62B 17/04 18/00 18/02 18/04 18/08  
Online: WPI, EPODOC, JAPIO

(54) Abstract Title  
Emergency escape hood

(57) Emergency escape hood 1 worn over a wearer's head to provide an enclosed space from which the wearer can inhale substantially contaminant free air drawn into it through a filter 10 when the wearer inhales. An oro-nasal mask 3 attached to the front interior of the hood has an outlet with a one-way valve 6 through which the wearer's exhalate can be exhausted to the exterior of the hood and an inlet 5 through which contaminant free inhalate drawn into the enclosed space can be fed into the oro-nasal mask 3 when the wearer breaths in. The hood 1 also includes inflatable means 17 at the rear inflatable using the wearer's exhalate via a valve and duct 16 to engage the rear of the wearer's head and thereby draw the oro-nasal mask 3 into sealed contact with the wearer's face.

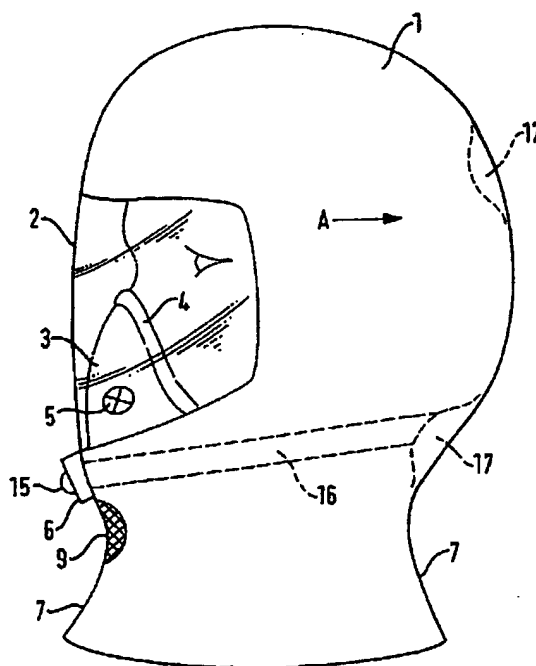


FIG. 1

At least one drawing originally filed was Informal and the print reproduced here is taken from a later filed formal copy.

The claims were filed later than the filing date but within the period prescribed by Rule 25(1) of the Patents Rules 1995.

PATENT AVAILABLE COPY

GB 2 367 755 A

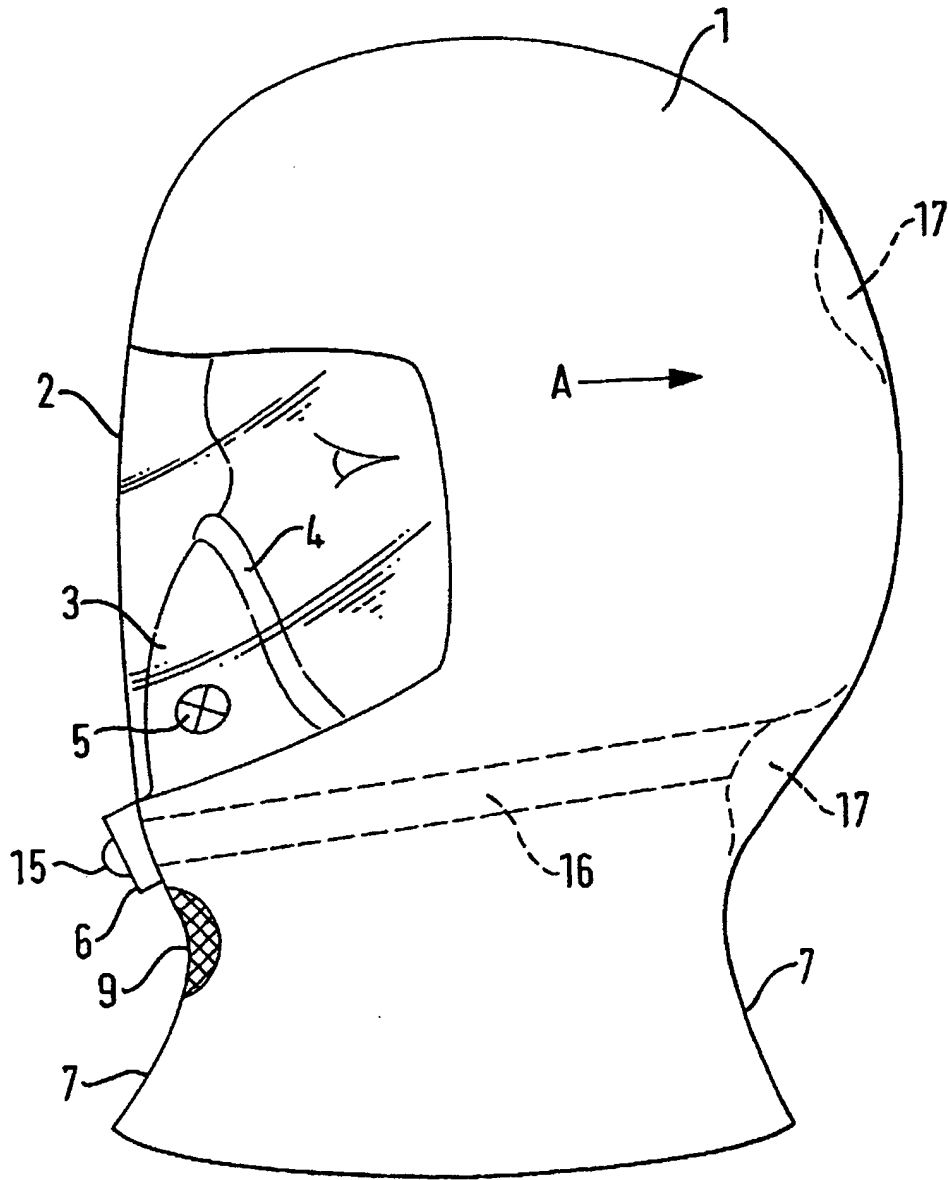


FIG. 1

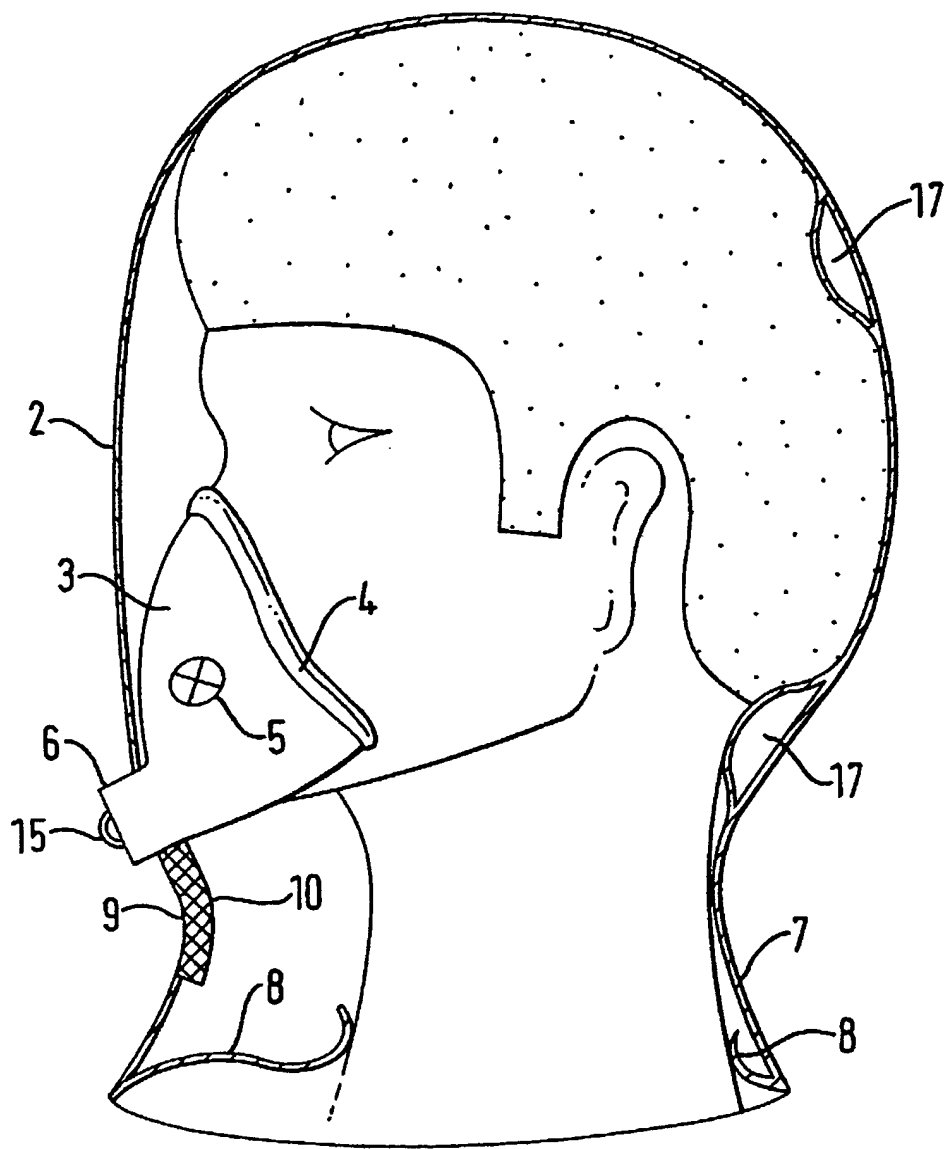


FIG. 2

## Emergency Escape Hood

This invention relates to an emergency escape hood which allows an escapee from a smoke filled environment to breathe non-contaminated  
5 air for long enough to exit the building or environment which is on fire or to escape from a toxic or oxygen deficient atmosphere.

It is an object of the present invention to provide a one-size emergency escape hood which will fit all wearers and which includes means which  
10 enable an oro-nasal mask therein to maintain its seal with the wearer's face at all times and thereby avoid or substantially reduce CO<sub>2</sub> build up within the hood.

According to the invention there is provided an emergency escape hood  
15 adapted to fit over the wearer's head to provide an enclosed space from which the wearer can inhale substantially contaminant free air drawn into it through a filter when the wearer inhales, an oro-nasal mask at the front of the hood having an outlet including a one-way valve through which the wearer's exhalate can be exhausted to the exterior of the hood  
20 and an inlet through which contaminant free inhalate drawn into said enclosed space can be fed into the oro-nasal mask when the wearer breathes in, the hood also having inflatable means at the rear thereof inflatable using the wearers exhalate to engage the rear of the wearer's head and thereby draw the oro-nasal mask into contact with the wearer's  
25 face to make a seal therewith.

Preferably the outlet includes valve means operable to divert exhalate to inflate the inflatable means.

Conveniently said valve is located adjacent the oro-nasal mask and in the region of the front of the hood and is normally biased to a closed position so that no exhalate reaches the inflatable means and exhalate  
5 instead passes to the exterior of the hood.

In the preferred embodiment, the oro-nasal mask is attached to the interior of the front of the hood and the inflatable means is provided on the interior of the rear of the hood.

10

The inflatable means can take any convenient form such as a pad or annular chamber on the interior or exterior surface of the rear of the hood. Alternatively a portion of the rear of the hood can be double skinned to provide the inflatable pad or chamber. The hood can be  
15 completely transparent or alternatively it can be made from a fireproof material with a viewing window therein.

A preferred embodiment of the invention will now be described, by way of example only, with reference to the accompanying drawings, in which:

20

Figure 1 is a view of a hooded breathing apparatus of the present invention; and

Figure 2 is a schematic view of the interior of the hood shown in Figure 1.

25

Referring to the drawings there is shown an emergency escape hood which comprises a smoke hood 1 made from a fire resistant fabric material. The hood 1 has a window 2 therein to enable a wearer to see

out of the hood. The hood can be made entirely of a transparent material if required. The hood has a bottom portion 7 with a neck seal 8 therein of known type to keep contaminants out. Part or all of the hood can be made of a fire resistant filter material.

5

The front of the hood has an inlet 9 which includes a filter 10 made of a known filter material which will remove most contaminants from inhalate breathed therethrough to the interior of the hood.

10 Alternatively part or all of said hood can be made of said filter material.

An oro-nasal mask 3 having a one-way valve 5 on each side thereof is secured to the front of the hood and includes a one-way valve 6 which allows exhalate to be exhausted to the exterior of the hood. To assist in  
15 the oro-nasal mask making a good seal with the wearer's face, it is formed with a flexible cuff or seal 4 around its perimeter. Oro-nasal masks of this type are well known in other applications so further description thereof will not be given here.

20 In use, the wearer draws breathes substantially contaminant free air from the interior of the hood 1 through the inlet valves 5 in the oro-nasal mask 3. On exhalation, most of the expirate containing  $\text{CO}_2$  passes out of the mask 3 through the outlet valve 6. The contaminant free air drawn into the interior of the hood through the inlet 9 is preferably  
25 directed over the visor or window 2 to reduce misting up.

If the apparatus is to function properly, it is important that  $\text{CO}_2$  exhaled out into the oro-nasal mask 3 does not leak back into the interior of the

hood 1 otherwise it could build up from the bottom of the hood. It is important therefore that the cuff 4 should make a tight seal with the wearer's face at all times. To achieve this, the hood 1 is provided at the rear thereof with inflatable means 17 in the form of an annular balloon or chamber 17 having a supply duct 16 thereto connected to the outlet valve 6 which also includes a second valve 15 which, when depressed, diverts exhalate through the duct 16 to the chamber 17.

When the wearer puts the hood on, it is a loose fit which it must be if it is to be fitted over the wearer's head with ease. The wearer then positions the oro-nasal mask 3 in the required position over his or her nose and mouth and uses a finger on the same hand that is holding the oro-nasal mask 3 in position to depress the second valve 15 on the front of the outlet valve 6 to divert exhalate along the duct 16 to inflate the annular balloon 17. This causes the whole hood 1 and the visor 2 to move in the direction of arrow A which in turn causes the oro-nasal mask 3 to be drawn against the wearer's face so that the cuff 4 makes an airtight seal therewith. As soon as the balloon 17 has been inflated sufficiently for the cuff 4 to make its seal with the wearer's face, the wearer can release pressure on the second valve 15 which then closes and seals the inlet duct 16 so the balloon remains inflated. Exhalate can then pass out through the valve 6 to the exterior of the hood as normal.

It will be seen from the foregoing description that a very simple way of tensioning the oro-nasal mask 3 against the wearer's face is provided which is easy to use and efficient in operation. It also allows the wearer to fit the hood quickly which is essential in an emergency situation. Furthermore, it has the advantage that only one size of hood needs to be

manufactured as it can be made to fit the wearer regardless of head size by varying the degree of inflation of the balloon 17.

Although an annular balloon 17 is illustrated in the drawings, it will be appreciated that the balloon could be in the form of a single pad or multiple pads or alternatively the rear of the helmet could be double skinned to provide one or more chambers which can be inflated to create the desired movement in the direction of arrow A.



## Claims

1. An emergency escape hood adapted to fit over the wearer's head to provide an enclosed space from which the wearer can inhale  
5 substantially contaminant free air drawn into said space through a filter when the wearer inhales, an oro-nasal mask at the front of the hood having an outlet including a one-way valve through which the wearer's exhalate can be exhausted to the exterior of the hood and an inlet through which contaminant free inhalate drawn into said enclosed space  
10 can be fed into the oro-nasal mask when the wearer breathes in, the hood also having inflatable means at the rear thereof inflatable using the wearer's exhalate to engage the rear of the wearer's head and thereby draw the oro-nasal mask into contact with the wearer's face to make a seal therewith.  
15
2. An emergency escape hood as claimed in claim 1 wherein the outlet includes valve means operable to divert exhalate to inflate the inflatable means.
- 20 3. An emergency escape hood as claimed in claim 2 wherein the valve means is located adjacent the oro-nasal mask and is normally biased to a closed position so that no exhalate reaches the inflatable means and exhalate can only pass to the exterior of the hood.
- 25 4. An emergency escape hood as claimed in claim 3 wherein the valve means is located in the region of the front of the hood.

5. An emergency escape hood as claimed in any preceding claim wherein the oro-nasal mask is attached to the interior of the front of the hood and the inflatable means is provided on the interior of the rear of the hood.
- 5 6. An emergency escape hood as claim in any preceding claim wherein the inflatable means is a pad.
7. An emergency escape hood as claimed in any of claims 1 to 5  
10 wherein the inflatable means is an annular chamber on the interior or exterior surface of the rear of the hood.
8. An emergency escape hood as claimed in claim 6 or claim 7 wherein a portion of the rear of the hood is double skinned to provide  
15 the inflatable pad or chamber.
9. An emergency escape hood as claimed in any preceding claim wherein the hood is completely transparent.
- 20 10. An emergency escape hood as claimed in any of claims 1 to 8 wherein the hood is made from a fireproof material with a viewing window therein.
11. An emergency escape hood substantially as herein described with  
25 reference to the accompanying drawings.



INVESTOR IN PEOPLE

Application No: GB 0018856.5  
Claims searched: 1-11

Examiner: Lee Ellison  
Date of search: 1 February 2002

## Patents Act 1977 Search Report under Section 17

### Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.T): A5T (TCH), (TCT), (TCX)

Int Cl (Ed.7): A62B 17/04, A62B 18/00, 18/02, 18/04, 18/08

Other: Online: WPI, EPODOC, JAPIO

### Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
A	GB2008413A (SECRETARY OF STATE FOR DEFENCE) Figures 1 & 2. Page 1 lines 5-12; 48-53; and 57-61; & page 2 lines 78-80, 89-97 & 100-101.	
A	GB826198 (FRANKENSTEIN & SONS & NEUMARK) See figures 1, 3, 6 & 7. Page 1 lines 31-51; page 2 lines 54-94; page 2 line - 127 - page 3 line 30.	
A	US5016625A (HSU et al) See figures 2, 4 & 7-9. Column 1 lines 43-45; column 2 line 11 - column 3 line 13.	
A	US4807614A (SMISSEN & RÖHLING) See figures 1 & 3b. Column 3 line 61 - column 4 line 2; & column 4 lines 11-22.	

X Document indicating lack of novelty or inventive step  
Y Document indicating lack of inventive step if combined  
with one or more other documents of same category.

& Member of the same patent family

A Document indicating technological background and/or state of the art.  
P Document published on or after the declared priority date but before the  
filing date of this invention.  
E Patent document published on or after, but with priority date earlier  
than, the filing date of this application.

**This Page is Inserted by IFW Indexing and Scanning  
Operations and is not part of the Official Record**

**BEST AVAILABLE IMAGES**

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☐ BLACK BORDERS
- ☐ IMAGE CUT OFF AT TOP, BOTTOM OR SIDES
- ☒ FADED TEXT OR DRAWING
- ☐ BLURRED OR ILLEGIBLE TEXT OR DRAWING
- ☐ SKEWED/SLANTED IMAGES
- ☐ COLOR OR BLACK AND WHITE PHOTOGRAPHS
- ☐ GRAY SCALE DOCUMENTS
- ☒ LINES OR MARKS ON ORIGINAL DOCUMENT
- ☐ REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY
- ☐ OTHER: \_\_\_\_\_

**IMAGES ARE BEST AVAILABLE COPY.**

**As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.**